

Final

Guidelines for verification of high resolution soil sealing layer

- Qualitative assessment -

Prepared by:

Chris Steenmans

Ana Sousa

03.12.2007

Version 1.0

European Environment Agency



Introduction

This document provides the guidelines for the verification of the high resolution soil sealing layer, based on a qualitative assessment of the mapped area. As agreed at the Eionet workshop on quality control and validation of land cover data (Copenhagen, 12-13 November 2007), these guidelines should help National Reference Centres on Land Cover (NRCs) to support EEA in doing the verification of the soil sealing layer that is being produced in the frame of GMES land monitoring fast track service precursor.

The soil sealing data is produced by a consortium of European service providers under contract with EEA and is based on the classification of the IMAGE2006 satellite data. The overall objective is the production of a seamless European high resolution core land cover dataset of built-up areas, including degree of soil sealing, for the reference year 2006. Built-up areas are characterized by the substitution of the original (semi)-natural cover or water surface with an artificial, often impervious, cover. This artificial cover is usually characterized by long cover duration (FAO Land Cover Classification System, 2005). Impervious surfaces of built-up areas account for 80 to 100% of the total cover. A per-pixel estimate of imperviousness (continuous variable from 0 to 100 percent) will be provided as index for degree of soil sealing for the whole geographic coverage. The data will be produced in full spatial resolution, i.e. 20 m by 20 m, which provides the best possible core data for any further analysis. The classification accuracy per hectare (based on a 100 m x 100 m grid) of built-up and non built-up areas should be at least 85%, for the European product.

The verification task will run from end November 2007 (when the first country deliveries are expected) until October 2008 (deadline for the last country to be delivered by the contractor) and should support EEA in accepting or rejecting the delivery of the country datasets produced by the service provider.

This qualitative assessment supported by NRCs is part of the grant agreement between EEA and participating countries in the GMES project land monitoring fast track service precursor/CLC2006.

NRCs are invited to carry out this assessment and to give feedback to the Agency within 4 weeks after reception of the data. If it is not possible to perform the verification task within these 4 weeks, it is expected that it will be completed before the end of the grant agreement, according to Article I.2 (Duration).

If countries would like to do additional checks or a quantitative assessment based on statistical validation, they are welcome to do so and to share the results with EEA.

Guidelines are provided for the preparatory work, the inventory of reference data that will be used, the description of the geometric and thematic quality and the overall qualitative assessment. NRCs should use this document template to report on the verification of the data, by filling in the grey boxes: insert free text in the "Text Form Fields" (); tick the "Check Box Form Field" (); and select from "Drop Down Form Field" (Please, select). Feel free to add additional text or illustrations (e.g. examples from screenshots).

A quantitative assessment or final validation of the European dataset will be carried out by EEA in collaboration with Eionet during late 2008-2009 (project details to be confirmed during the second half of 2008). This European validation will be based as much as possible on the results of national validations. NRCs are invited to inform EEA about planned activities (if any) at national level. Preliminary recommendations for such a statistical validation (quantitative assessment) are attached in annex for information.

Note: After filling in the template save it as a word document: filename: countryISOcode.doc (e.g. AT.doc).

1. Preparatory work

1. Upload the data that will be made available by EEA via ftp server or sent by mail. Please inform EEA on reception of the data;
2. Check for available reference data that will be used during the verification;
3. List the experts/expertise that are involved in the verification task:

Expert name	Field of expertise	Institution
Petra Krsnik	GIS expert, geography	EARS
Petra Souvent	Groundwater, GIS	EARS
Aleš Veršič	GIS expert, geography	EARS

The average time needed for this verification is estimated at one person/day per 10.000 km². Please note that this time can vary depending on the experience of the interpreter, the availability of the reference data and the complexity of the landscape. The table below gives an indicative estimate for the EEA member countries.

Country	Area (km ²)	Person days	Country	Area (km ²)	Person days
Austria + Liechtenstein	83.855	9	Lithuania	65.200	7
Belgium	30.520	3	Luxembourg	2.586	<1
Bulgaria	110.994	11	Malta	316	<1
Cyprus	9.251	1	Netherlands	41.526	4
Czech Republic	78.864	8	Norway	323.878	33
Denmark	43.075	4	Poland	312.683	31
Estonia	45.200	5	Portugal	88.935	9
Finland	338.145	34	Romania	237.500	24
France	543.965	55	Slovakia	20.251	5
Germany	357.028	36	Slovenia	49.035	2
Greece	131.957	13	Spain	504.782	51
Hungary	93.030	9	Sweden	449.964	39
Iceland	102.820	10	Switzerland	41.293	4
Ireland	70.282	7	Turkey	789.452	79
Italy	301.245	30	United Kingdom	244.082	25
Latvia	63.700	6			

2. Reference data

Please list the reference data that is used for this verification:

1. Topographic maps

No Yes Year: 2005 Area: Full country

If only a subset, then please specify the area(s):

2. Aerial orthophotos

No Yes Year: 2006 Area: Full country

If only a subset, then please specify the area(s):

3. Very High Resolution satellite data

No Yes Year: 2006 Area: Full country

If only a subset, then please specify the area(s):

4. CLC2000

No Yes

5. Other

Name: CLC Year: 2006 Area: Full country

If only a subset, then please specify the area(s):

Name: Building Cadaster?? Year: 2006 Area:

Full country

If only a subset, then please specify the area(s):

B. Geometric quality

Please provide your qualitative assessment of the geometric quality of the data. The objective of this task is to perform a visual analysis of the soil sealing dataset concerning its co-registration when put in overlay with other reference datasets.

1. Check geometric accuracy:

Is there a visible shift? Yes No

If yes:

a. Is there a systematic shift? Yes No

b. Is there a local shift? Yes No

Where?

Please indicate the region, place name, coordinates or other description of location:

2. Is the used projection correct? Yes No

3. Comments concerning geometric issues (if any), or in case the geometric quality could not be checked, please provide a short explanation:

C. Thematic quality

Please provide your qualitative assessment of the thematic quality of the data. The objective of this task is to perform a visual comparison between available reference data and the soil sealing dataset. You are requested to verify for a number of land cover classes (similar to the CLC classes at levels 2 or 3) to check if any errors in the data can be identified. Please note that many land cover classes can include sealed surfaces, especially for features <25 ha.

For this part of the verification, it is recommended to use a binary mask (built-up/non-built-up area) that can be used in overlay with the reference data:

1. Apply a lookup table to map all pixels > 80% degree of soil sealing as built-up area;
2. Perform the checks on pixels > 80% degree of soil sealing by screening for each of the land cover classes if built-up or non built-up areas are correctly mapped. Feel free to add screenshots with examples to illustrate the quality judgement.

For your qualitative assessment, following examples of check boxes can be ticked:

- “excellent” meaning that you expect that the accuracy of the built-up data is reaching almost 100%; no errors could be found in the areas that were verified.
- “good” meaning that you are confident that the classification results are at least 85 % correct; only sporadic errors were encountered in the areas that were verified.
- “acceptable” meaning that you estimate that in most of the verified areas the classification results will probably reach an accuracy of 85 %; some minor errors could be detected in the areas that were verified.
- “insufficient” meaning that you do not expect that the classification results will reach the minimum of 85 % accuracy; you encountered several errors in different regions.
- “very poor” meaning that you are confident that the classification results are bad with regard to presence of built-up area; most of the areas verified are wrongly mapped.

Urban fabric:

a. Did you check if built-up/non built-up areas are correctly mapped within urban fabric (e.g. houses, buildings, streets, etc.)?

- Yes No Not possible

b. How would you assess the quality of the mapped built-up area within the urban fabric?

- very poor insufficient acceptable good excellent

- a. Short description of errors found (if any): Missing build-up or missinterpreted areas.

Industrial or commercial units:

- a. Did you check if built-up/non built-up areas are correctly mapped within industrial or commercial units (e.g. parking lots, buildings, etc.)?
 Yes No Not possible
- b. How would you assess the quality?
 very poor insufficient acceptable good excellent
- b. Short description of errors found (if any): Missing build-up or missinterpreted areas.

Road and rail networks and associated land:

- a. Did you check if built-up/non built-up areas within road and rail networks and associated land are correctly mapped (e.g. railway stations, highways >20 m width, etc.)?
 Yes No Not possible
- b. How would you assess the quality?
 very poor insufficient acceptable good excellent
- c. Short description of errors found (if any):

Port areas:

- a. Did you check if built-up/non built-up areas in port areas are correctly mapped (e.g. installations, dykes, etc.)?
 Yes No Not possible
- b. How would you assess the quality?
 very poor insufficient acceptable good excellent
- d. Short description of errors found (if any):

Airports:

- c. Did you check if built-up/non built-up areas in airports are correctly mapped (e.g. runways, buildings, etc.)?
 Yes No Not possible
- d. How would you assess the quality?
 very poor insufficient acceptable good excellent
- e. Short description of errors found (if any): Missing build-up areas.

Mine, dump and construction sites:

- a. Did you check if built-up/non built-up areas in mine, dump and construction sites are correctly mapped (e.g. buildings, infrastructure, etc)?
- Yes No Not possible
- b. How would you assess the quality?
- very poor insufficient acceptable good excellent
- f. Short description of errors found (if any):

Arable land:

- a. Did you check if built-up/non built-up areas in arable land are correctly mapped (e.g. bare soil, large farm houses, roads >20m width, etc)?
- Yes No Not possible
- b. How would you assess the quality?
- very poor insufficient acceptable good excellent
- g. Short description of errors found (if any): Missing build-up or missinterpreted areas. Some problems with border areas between forest and arable land.

Heterogeneous agricultural areas:

- a. Did you check if built-up/non built-up areas in heterogeneous agricultural areas are correctly mapped (e.g. buildings, roads >20m, etc)?
- Yes No Not possible
- b. How would you assess the quality?
- very poor insufficient acceptable good excellent
- h. Short description of errors found (if any): Missing build-up or missinterpreted areas.

Forest:

- a. Did you check built-up/non built-up areas in forests are correctly mapped (e.g. clear-cuts, roads, etc.)?
- Yes No Not possible
- b. How would you assess the quality?
- very poor insufficient acceptable good excellent

- i. Short description of errors found (if any): Missing build-up or missinterpreted areas. Natural grasslands is interpreted as Build-up area (several cases).

Scrub and/or herbaceous vegetation associations:

- a. Did you check if built-up/non built-up areas in scrub and/or herbaceous vegetation areas are correctly mapped (e.g. dry vegetation, rock outcrop, etc.)?
 Yes No Not possible
- b. How would you assess the quality?
 very poor insufficient acceptable good excellent
- j. Short description of errors found (if any): Missing build-up or missinterpreted areas.

Beaches, dunes and sands:

- a. Did you check if built-up/non built-up areas in beaches, dunes and sand areas are correctly mapped?
 Yes No Not possible
- b. How would you assess the quality?
 very poor insufficient acceptable good excellent
- k. Short description of errors found (if any):

Bare rocks:

- a. Did you check if built-up/non built-up areas in bare rock areas are correctly mapped?
 Yes No Not possible
- b. How would you assess the quality?
 very poor insufficient acceptable good excellent
- l. Short description of errors found (if any): Missinterpreted areas

Sparsely vegetated areas:

- a. Did you check if built-up/non built-up areas in sparsely vegetated areas are correctly mapped?
 Yes No Not possible
- c. How would you assess the quality?

very poor insufficient acceptable good excellent

m. Short description of errors found (if any):

Glaciers and perpetual snow:

a. Did you check if built-up/non built-up areas in glaciers and perpetual snow areas are correctly mapped?

Yes No Not possible

b. How would you assess the quality?

very poor insufficient acceptable good excellent

n. Short description of errors found (if any):

Inland wetlands:

a. Did you check if built-up/non built-up areas in inland wetlands are correctly mapped ?

Yes No Not possible

b. How would you assess the quality?

very poor insufficient acceptable good excellent

o. Short description of errors found (if any):

Salines:

c. Did you check if built-up/non built-up areas in salines are correctly mapped?

Yes No Not possible

d. How would you assess the quality?

very poor insufficient acceptable good excellent

p. Short description of errors found (if any): Missinterpreted areas

Intertidal flats:

a. Did you check if built-up/non built-up areas in intertidal flats are correctly mapped?

Yes No Not possible

b. How would you assess the quality?

very poor insufficient acceptable good excellent

q. Short description of errors found (if any):

Coastal lagoons:

- a. Did you check if built-up/non built-up areas in coastal lagoons are correctly mapped?
 Yes No Not possible
- b. How would you assess the quality?
 very poor insufficient acceptable good excellent
- r. Short description of errors found (if any):
3. Comments concerning thematic content check (if any). Please indicate which part of the data was verified (full coverage or partial coverage, etc.):

Some general remarks:

Problems with:

- red roof houses (interpreted as non sealed areas),
- arable land with light brown colour is interpreted as sealed area
- bare rock category – scree interpreted as sealed area.

Two CLC categories, permanent crops and pastures are not included in this guideline. They were checked and results are insufficient for permanent crops and good for pastures.

D. Overall qualitative assessment of the dataset

The overall qualitative assessment is meant to support EEA in our contractual procedures with the service provider regarding the acceptance of the dataset. While the previous thematic quality assessment was looking at class by class, this section should provide your assessment of the quality for the whole territory.

How would you assess the overall quality of the mapped built-up/non built-up areas for the dataset provided?

very poor insufficient acceptable good excellent

Please provide your final comments and additional remarks concerning overall qualitative assessment (e.g. difference in quality between regions e.g. mountains, agglomerations, coastal zones, etc), if any:

Useful for urban areas, but not for general purpose.
--

E. Quantitative validation

Are you planning to carry out a statistical validation (quantitative assessment) of the national dataset?

Yes No

If yes, it would be helpful to provide us information about the timing, methodological approach or any other additional information which might be available:

Are you willing to contribute to the final validation of the European dataset (actions scheduled from the second half of 2008 onwards)?

Yes No

Filled in by Petra Krsnik, Petra Souvent and Aleš Veršič

Telephone number: +386 (1) 478 4534

Email address: aversic@gov.si

Date: 24.1.2008

Thank you!

ANNEX (PICTURES)

SOIL SEALING VERIFICATION

28.12.2007

1.

Sheet 19: Peč

2.

Sheet 21: Koren

3.

Sheet 23: Kepa

4.

Sheet 4: Kuzma

3.1.2008

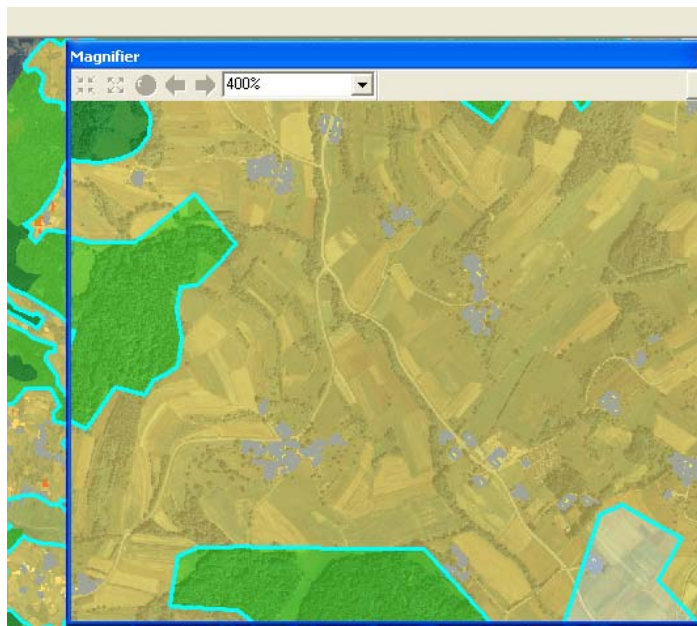
5.

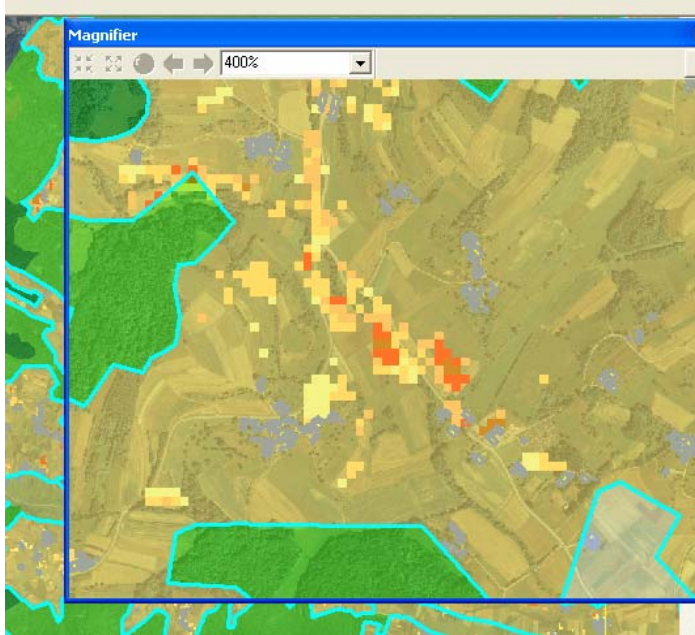
Sheet 4: Mačkovci

Present land covers:

- forest
- heterogeneous agricultural areas
- arable land
- permanent crops (not included in soil sealing specification)

An example of misinterpreted built-up areas in Heterogeneous agricultural areas.





6.

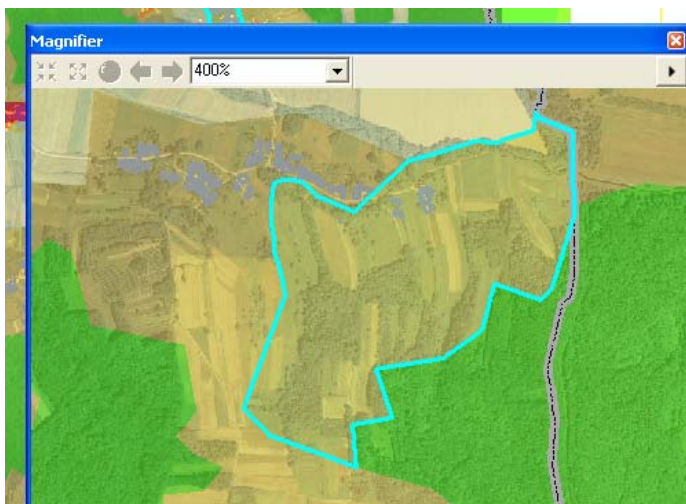
Sheet 2: Šalovci

Present land covers:

- forest
- pastures
- heterogeneous agricultural areas
- arable land
- urban fabric

An example of misinterpreted built-up areas in Pastures

An example of misinterpreted built-up areas in Heterogeneous agricultural areas.



Qualitative assessment HR soil sealing layer



An example of misinterpreted built-up areas in Forest.



7.
Sheet 16: Pernice
Present land covers:

- forest
- pastures
- heterogeneous agricultural areas

8.

Sheet 15: Radelj

Present land covers:

- forest
- pastures
- heterogeneous agricultural areas

9.

Sheet 14: Remšnik

Present land covers:

- forest
- pastures
- heterogeneous agricultural areas
- scrub and/or herbaceous vegetation associations

10.

Sheet 13: Spodnja Kapla

Present land covers:

- forest
- pastures
- heterogeneous agricultural areas

11.

Sheet 12: Zgornja Kungota

Present land covers:

- forest
- pastures
- heterogeneous agricultural areas
- scrub and/or herbaceous vegetation associations
- arable land
- urban fabric
- permanent crops (not included in soil sealing specification)

12.

Sheet 11: Šentilj

Present land covers:

- forest
- pastures
- heterogeneous agricultural areas
- arable land
- urban fabric
- permanent crops (not included in soil sealing specification)
- road and rail networks and associated land

13.

Sheet 10: Zgornja Ščavnica

- forest
- pastures
- heterogeneous agricultural areas
- arable land
- urban fabric
- permanent crops (not included in soil sealing specification)

14.

Sheet 10: Gornja Radgona

- forest
- pastures
- heterogeneous agricultural areas
- arable land
- urban fabric
- permanent crops (not included in soil sealing specification)

15.

Sheet 11: Kobilje

- forest
- heterogeneous agricultural areas
- arable land
- urban fabric
- permanent crops (not included in soil sealing specification)
- scrub and/or herbaceous vegetation associations

4.1.2008

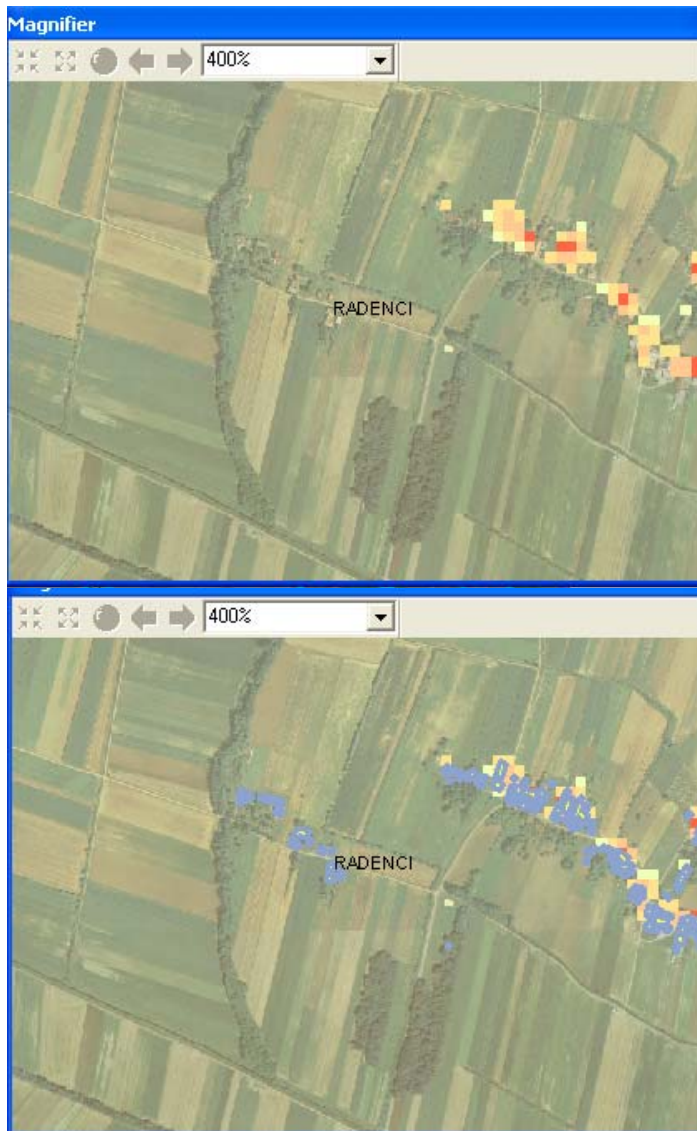
16.

Sheet 8: Radenci

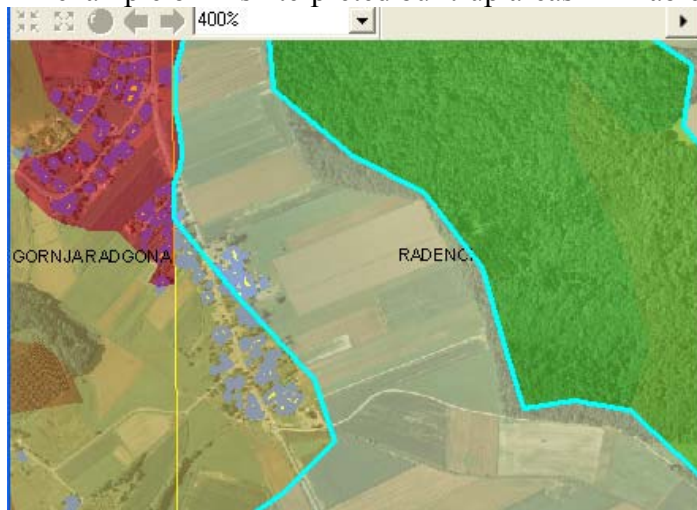
Present land covers:

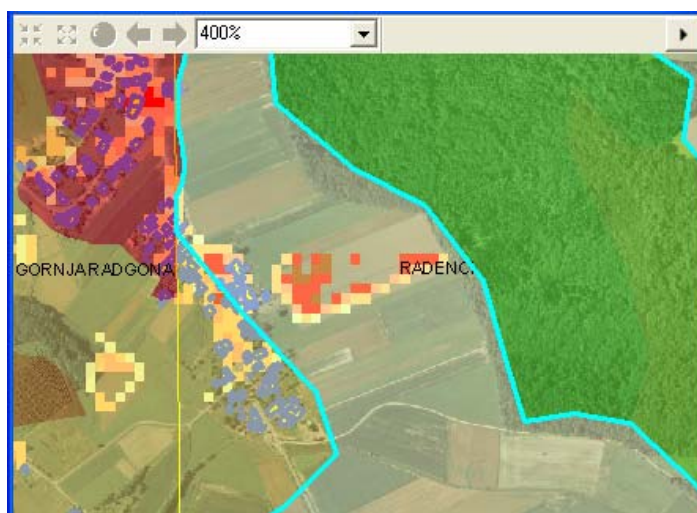
- forest
- heterogeneous agricultural areas
- pastures
- arable land
- urban fabric (one area wrong defined as urban fabric in CLC)
- inland waters

An example of missing built-up areas in Arable land.

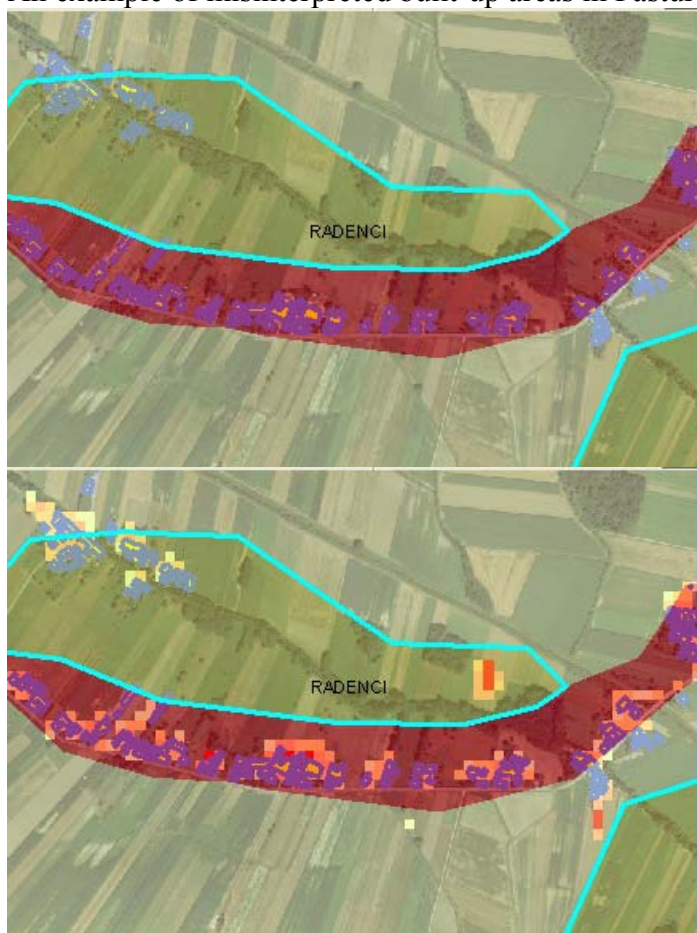


An example of misinterpreted built-up areas in Arable land.





An example of misinterpreted built-up areas in Pastures.



17.

Sheet 7: Murska Sobota

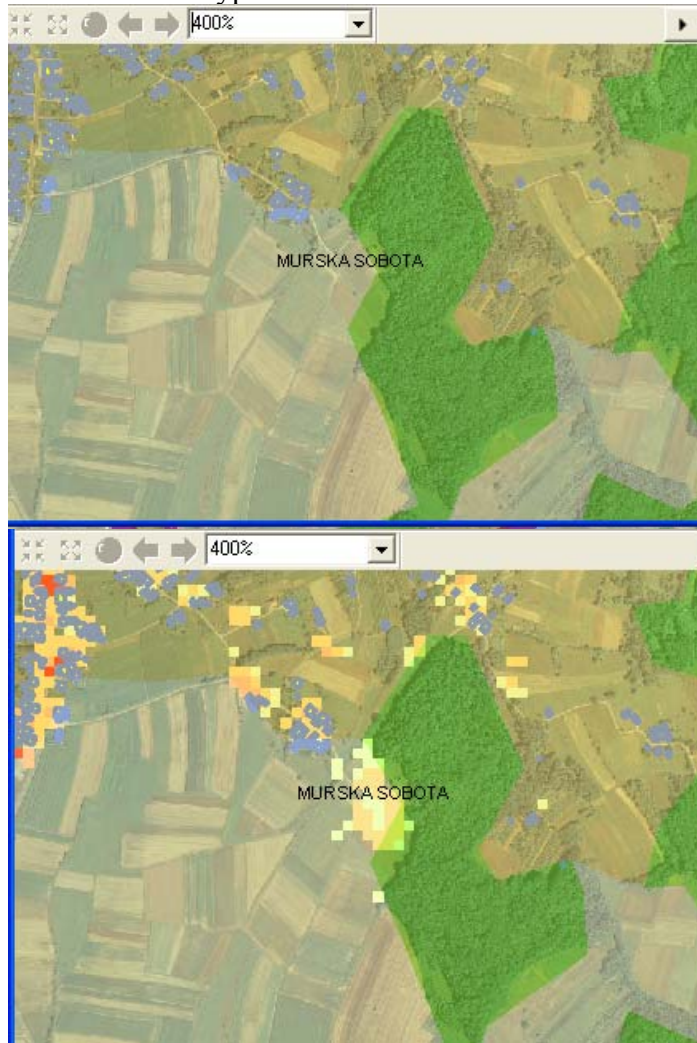
Present land covers:

- forest
- heterogeneous agricultural areas
- pastures
- arable land
- urban fabric

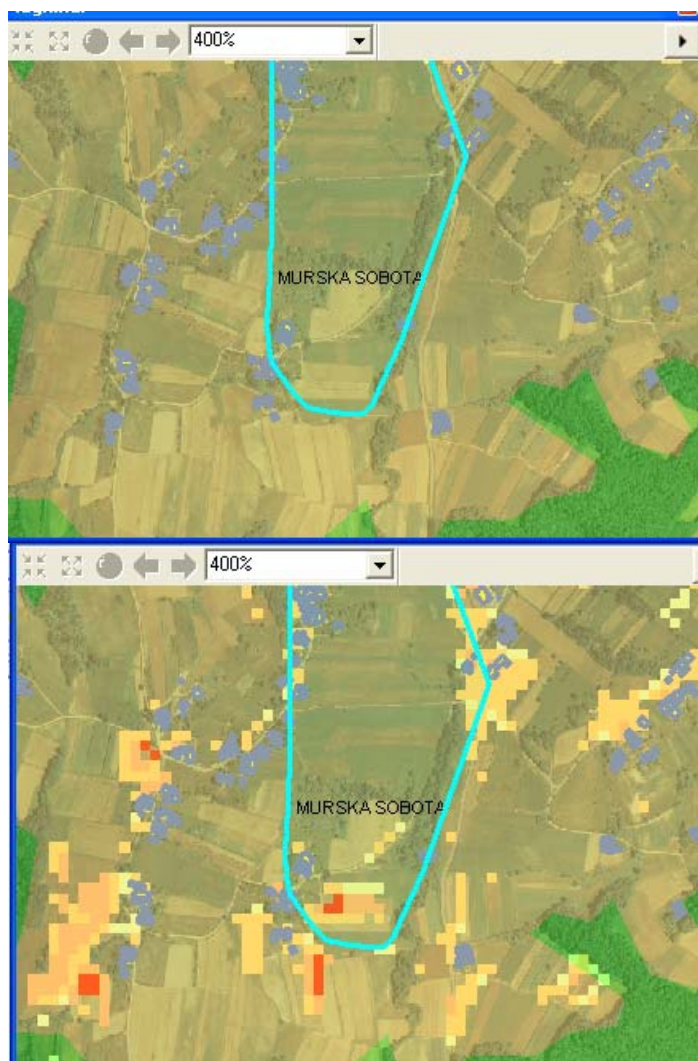
Qualitative assessment HR soil sealing layer

- inland waters
- mine, dump, construction sites
- artificial, non-agricultural vegetated areas

An example of misinterpreted built-up areas in Arable land. Problems on the edge of two land cover types.



An example of misinterpreted built-up areas in Pastures.



18.

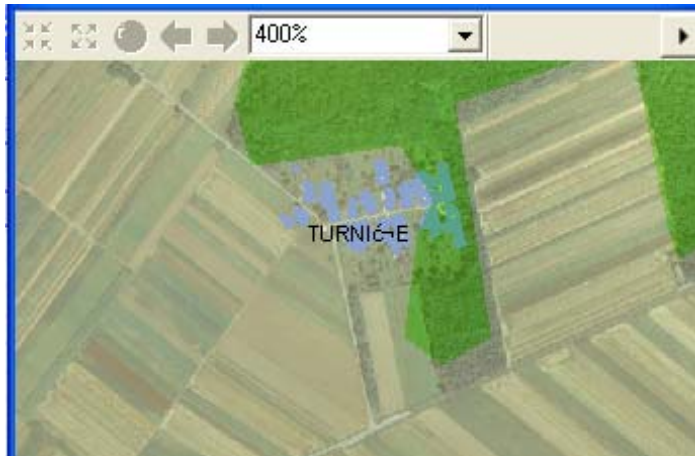
Sheet 6: Turnišče

Present land covers:

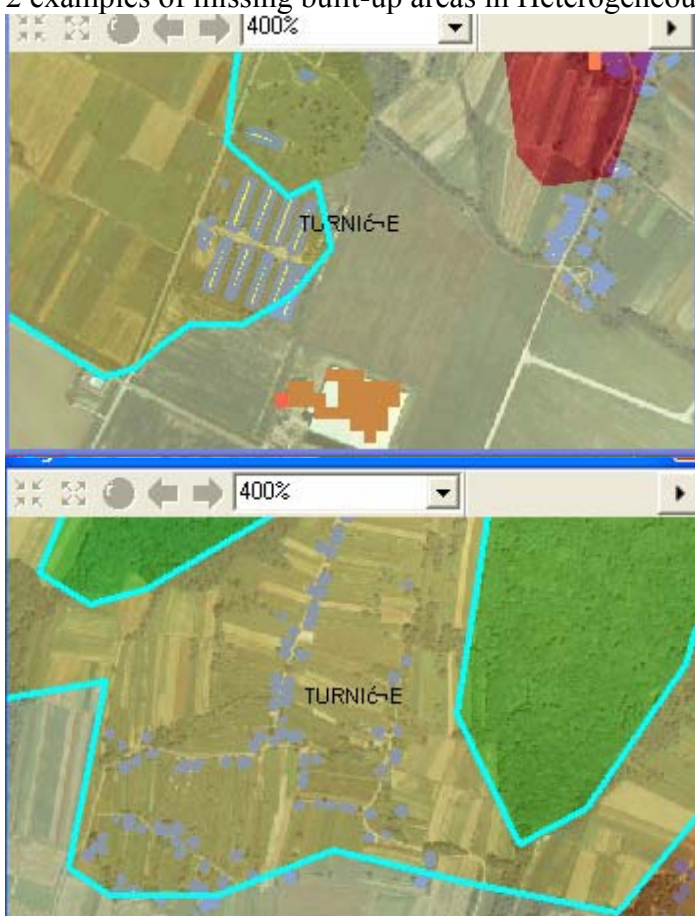
- forest
- heterogeneous agricultural areas
- pastures
- arable land
- urban fabric
- inland waters
- permanent crops

An example of missing built-up areas in Arable land.

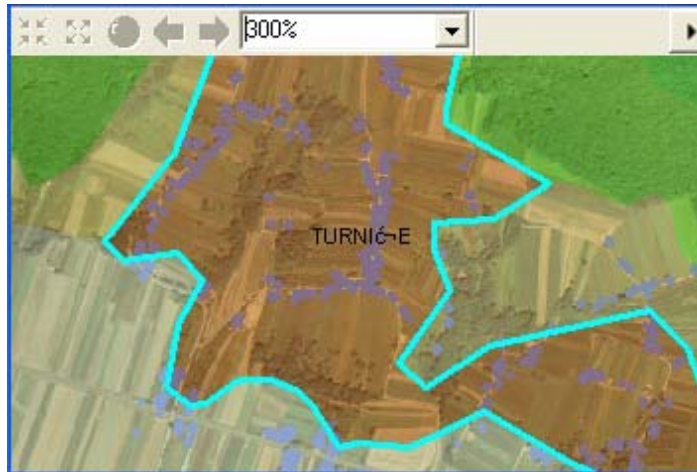
Qualitative assessment HR soil sealing layer



2 examples of missing built-up areas in Heterogeneous agricultural areas.



An example of missing built-up areas in Permanent crops.



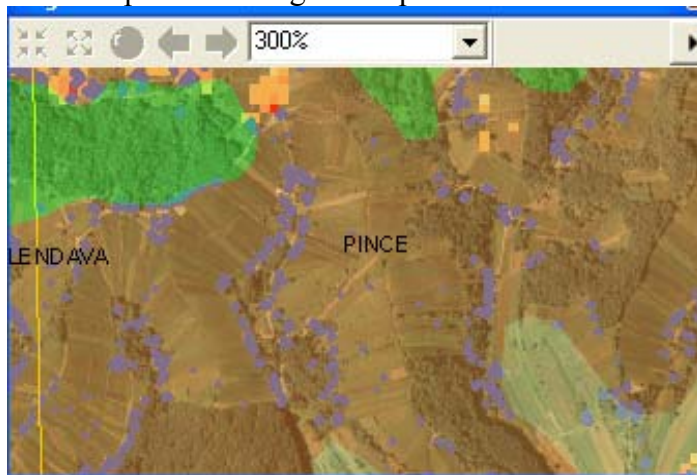
19.

Sheet 17: Pince

Present land covers:

- forest
- heterogeneous agricultural areas
- arable land
- permanent crops
- scrub and/or herbaceous vegetation associations

An example of missing built-up areas in Permanent crops.



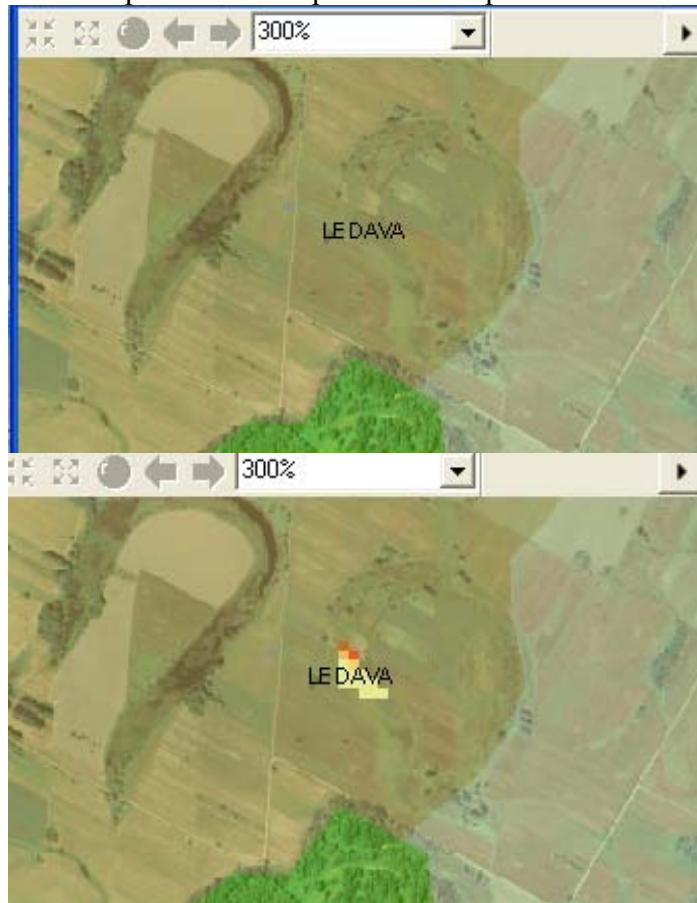
20.

Sheet 35: Ledava

Present land covers:

- forest
- pastures
- heterogeneous agricultural areas
- arable land
- scrub and/or herbaceous vegetation associations
- inland waters

An example of misinterpreted built-up areas in Heterogeneous agricultural areas.



21.

Sheet 37: Mura

Present land covers:

- inland waters

22.

Sheet 64: Drava

Sheet not in Slovenia.

7.1.2008

23.

Sheet 39: Središče ob Dravi

Present land covers:

- forest
- heterogeneous agricultural areas

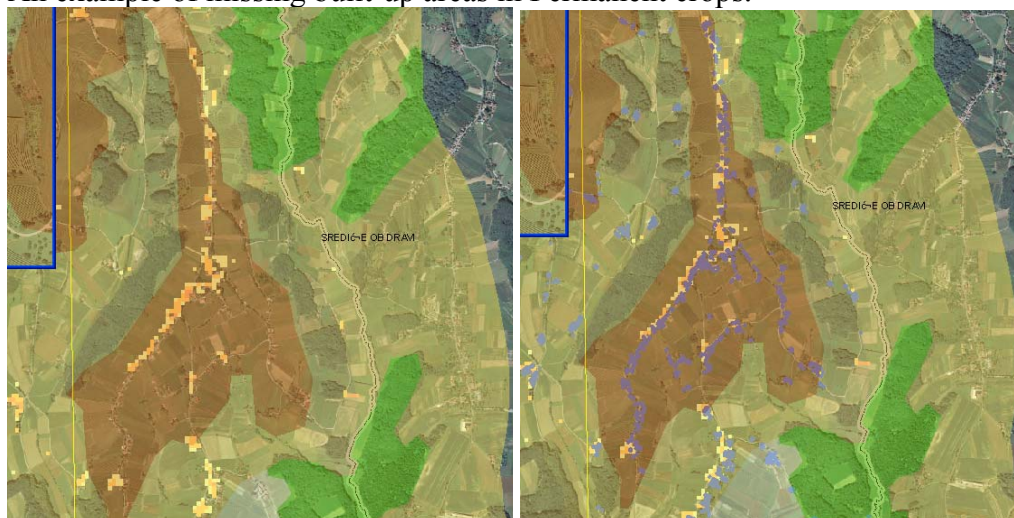
Qualitative assessment HR soil sealing layer

- arable land
- urban fabric
- permanent crops

An example of missing built-up areas in Heterogeneous agricultural areas.



An example of missing built-up areas in Permanent crops.



24.
Sheet 66: Turški vrh

Qualitative assessment HR soil sealing layer

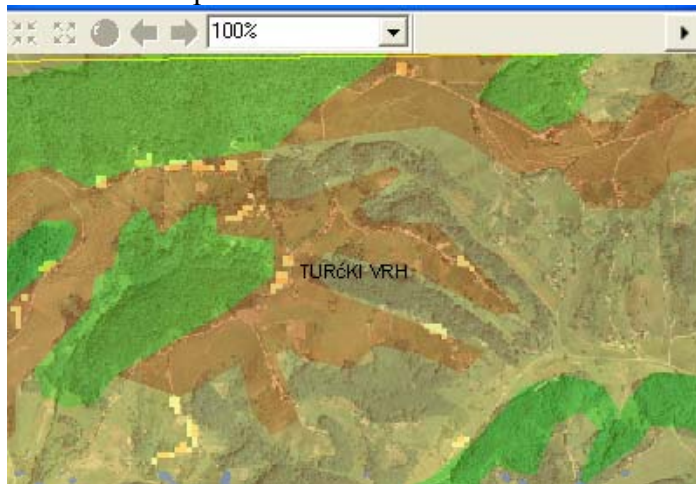
Present land covers:

- forest
- heterogeneous agricultural areas
- arable land
- permanent crops

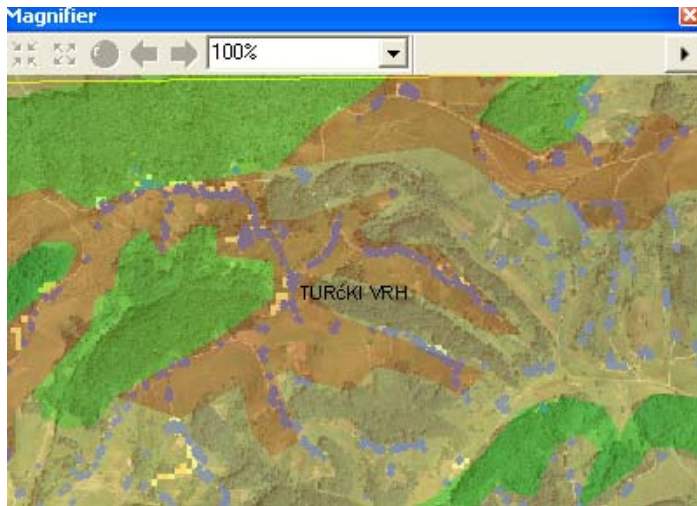
An example of missing built-up areas in Heterogeneous agricultural areas.



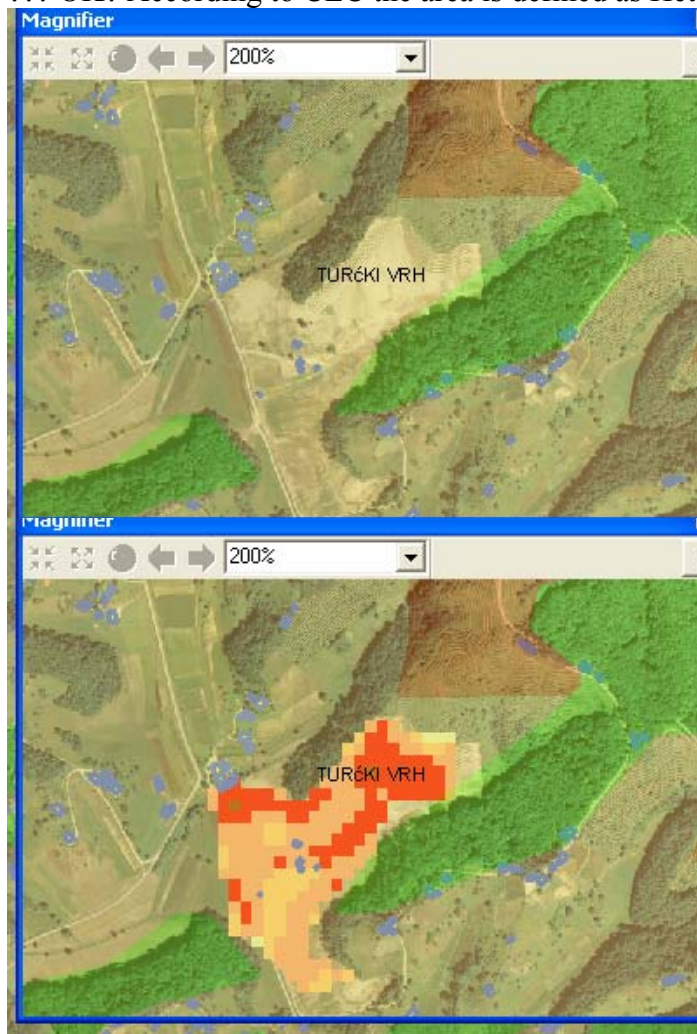
An example of missing built-up areas in Heterogeneous agricultural areas and Permanent crops.



Qualitative assessment HR soil sealing layer



??? OK? According to CLC the area is defined as Heterogeneous agricultural area.



25.

Sheet 68: Cirkulane

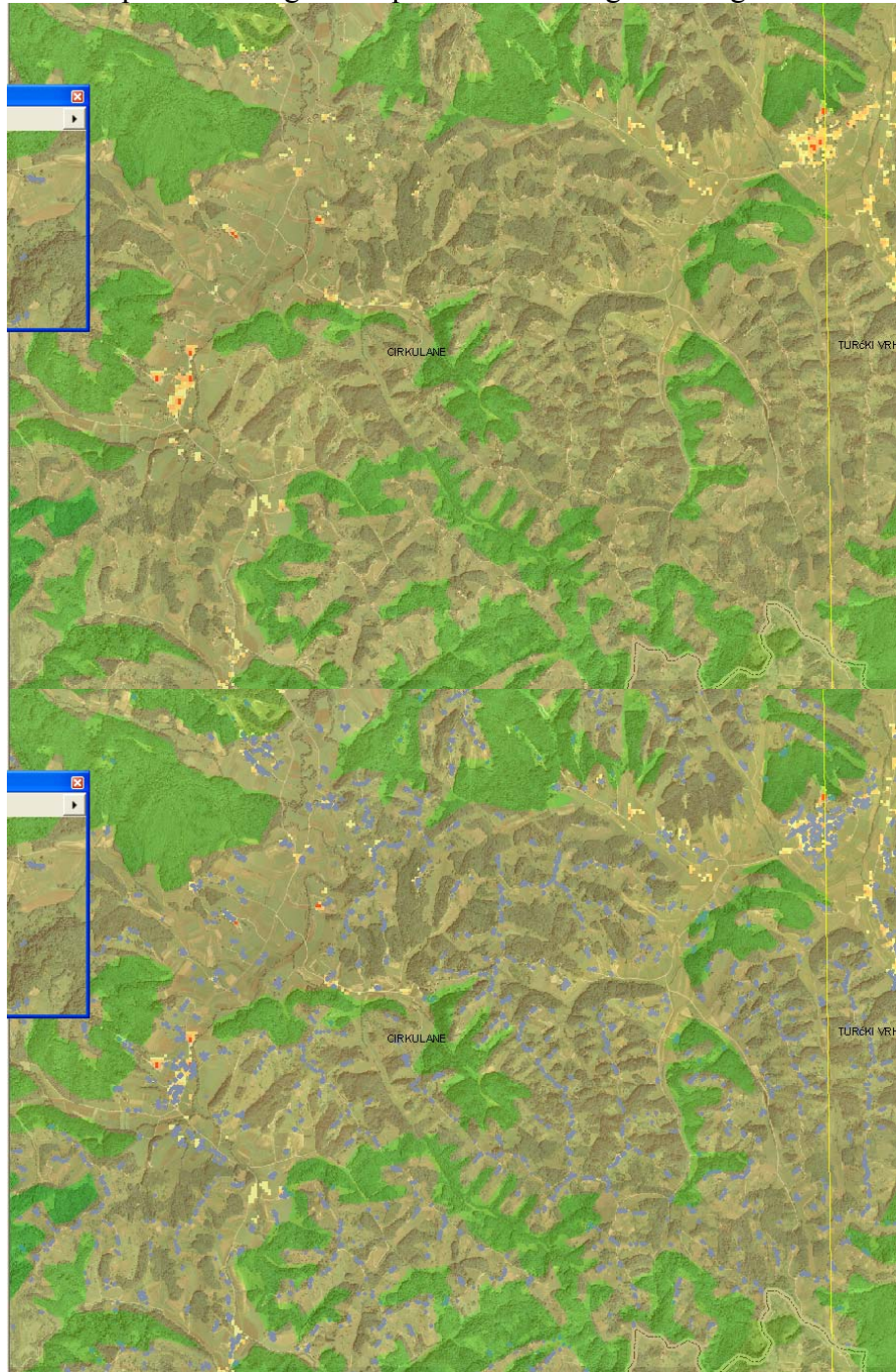
Present land covers:

-forest

Qualitative assessment HR soil sealing layer

- heterogeneous agricultural areas
- pastures
- arable land
- urban fabric
- inland waters
- permanent crops
- scrub and/or herbaceous vegetation associations

An example of missing built-up areas in Heterogeneous agricultural areas.



Sheet 41: Ormož

Present land covers:

- forest
- heterogeneous agricultural areas
- pastures
- arable land
- urban fabric
- industrial or commercial units
- inland waters
- permanent crops
- scrub and/or herbaceous vegetation associations

An example of missing built-up areas in Permanent crops.

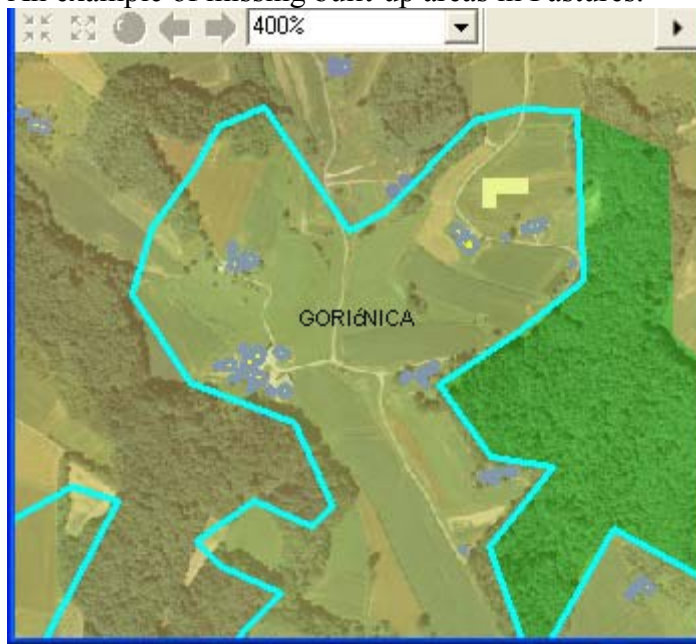


Sheet 43: Gorišnica

Present land covers:

- forest
- heterogeneous agricultural areas
- pastures
- arable land
- urban fabric
- inland waters
- permanent crops
- scrub and/or herbaceous vegetation associations

An example of missing built-up areas in Pastures.



8.1.2008

28.

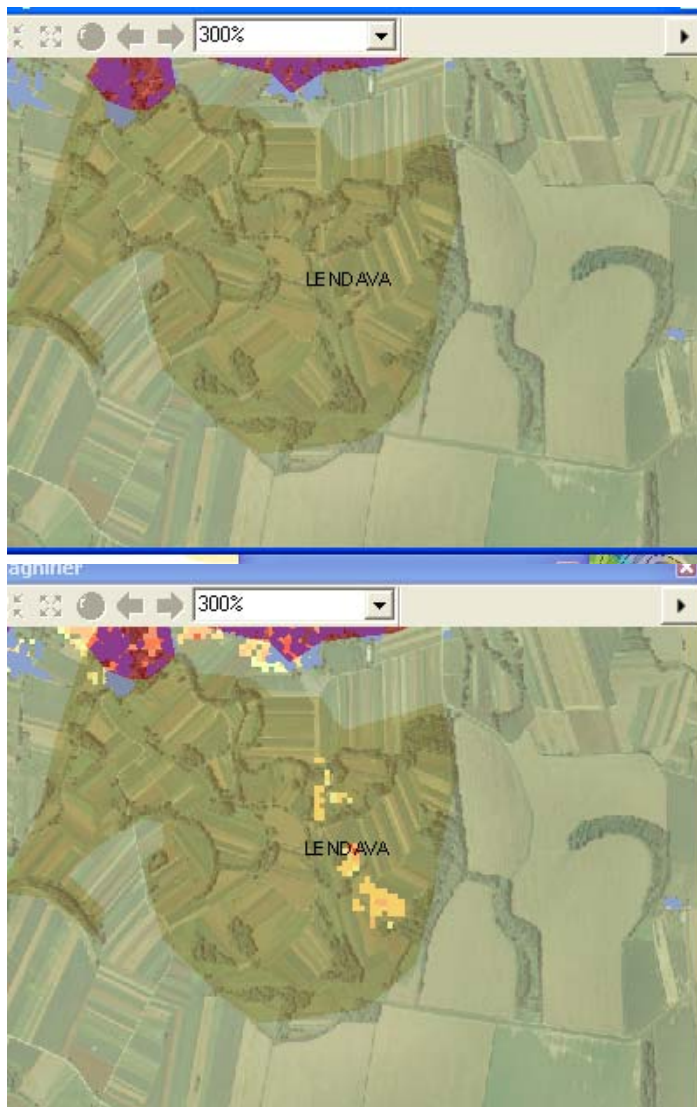
Sheet 18: Lendava

Present land covers:

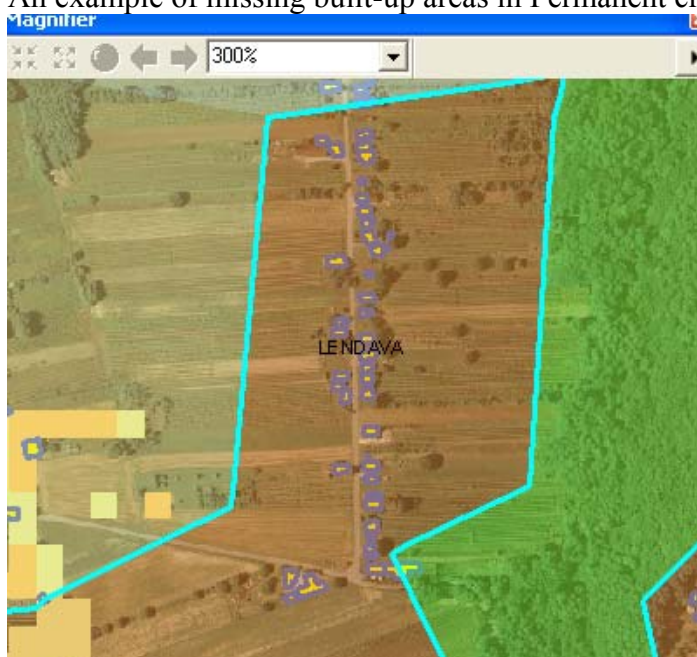
- forest
- heterogeneous agricultural areas
- pastures
- arable land
- urban fabric
- inland waters
- permanent crops
- scrub and/or herbaceous vegetation associations

An example of misinterpreted built-up areas in Heterogeneous agricultural areas.

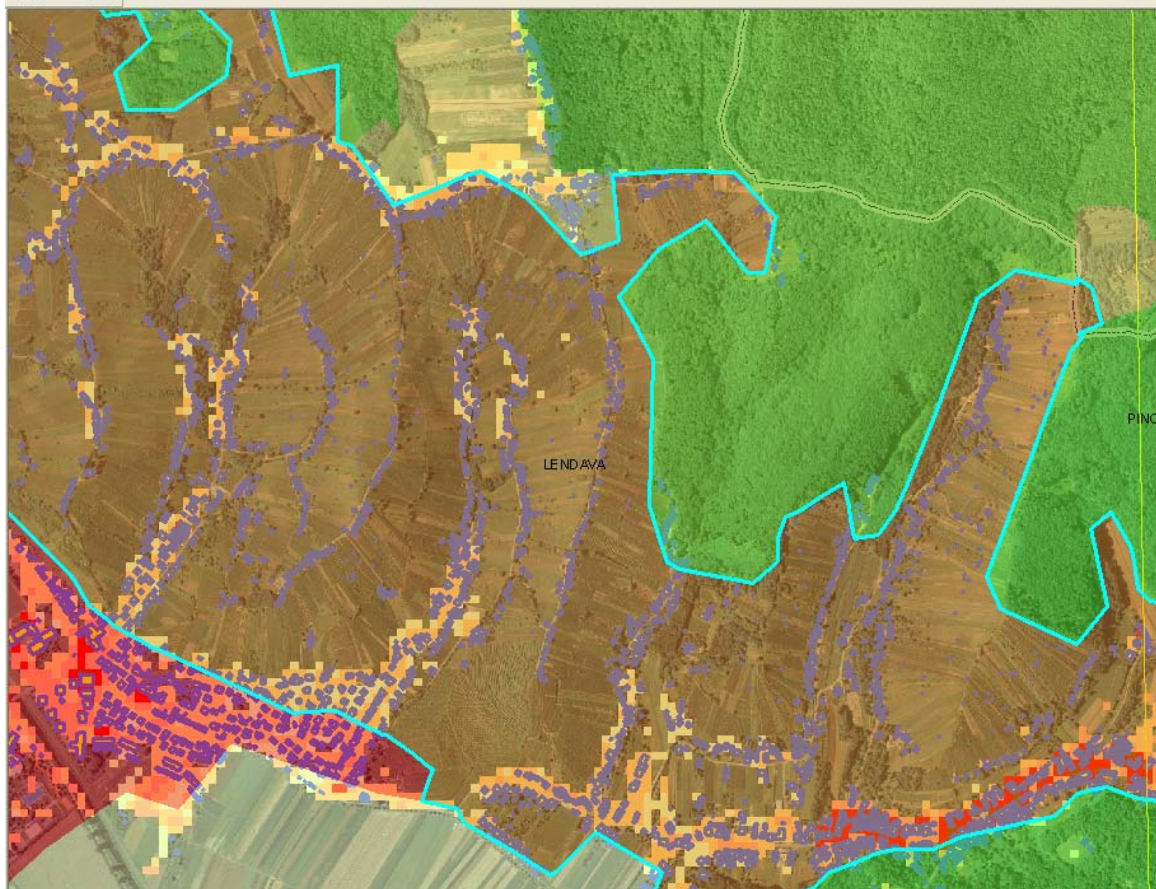
Qualitative assessment HR soil sealing layer



An example of missing built-up areas in Permanent crops. Houses with red roofs.



An example of missing built-up areas in Permanent crops. Mostly houses with red roofs.



29.

Sheet 20: Črenšovci

Present land covers:

- forest
- heterogeneous agricultural areas
- pastures
- arable land
- urban fabric
- inland waters
- permanent crops
- scrub and/or herbaceous vegetation associations

30.

Sheet 22: Ljutomer

Present land covers:

- forest
- heterogeneous agricultural areas
- arable land
- urban fabric
- inland waters
- permanent crops

- scrub and/or herbaceous vegetation associations
- industrial or commercial units
- mine, dump, construction sites

31.

Sheet 24: Bučkovci

Present and covers:

- forest
- heterogeneous agricultural areas
- pastures
- arable land
- urban fabric
- inland waters
- permanent crops
- mine, dump, construction sites

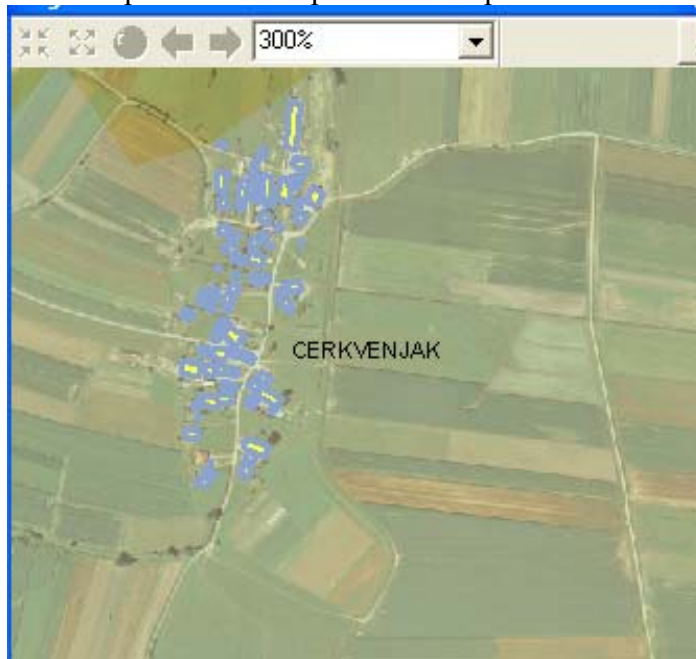
32.

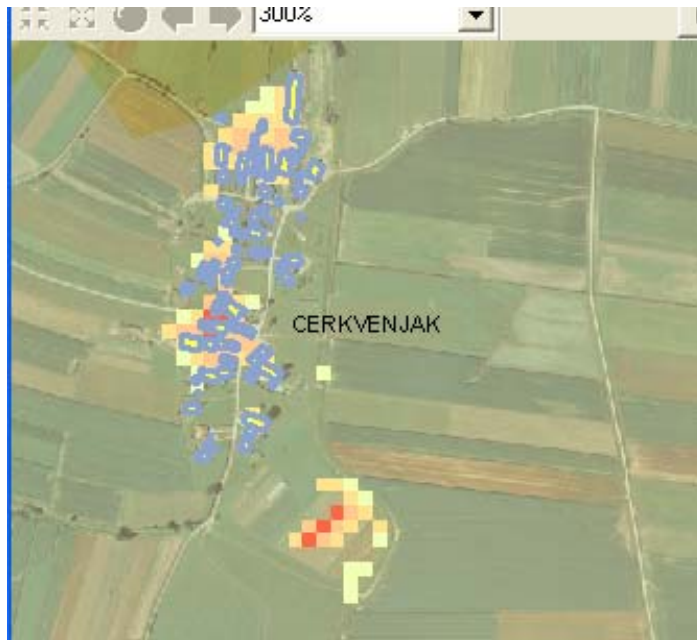
Sheet 25: Cerkvjenjak

Present and covers:

- forest
- heterogeneous agricultural areas
- pastures
- arable land
- urban fabric
- inland waters
- permanent crops

An example of misinterpreted built-up areas in Arable land.





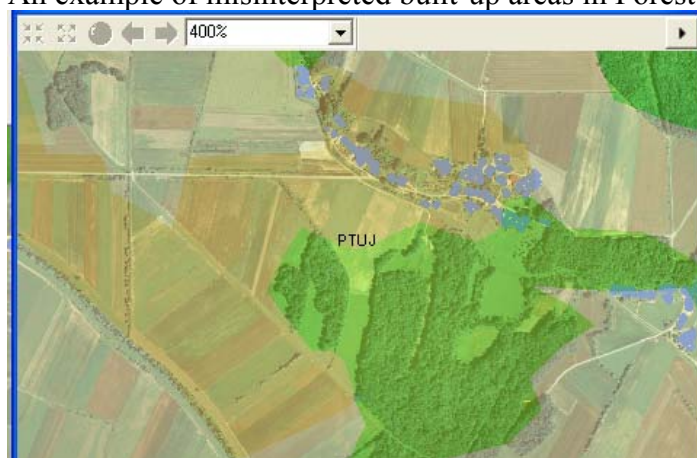
33.

Sheet 45: Ptuj

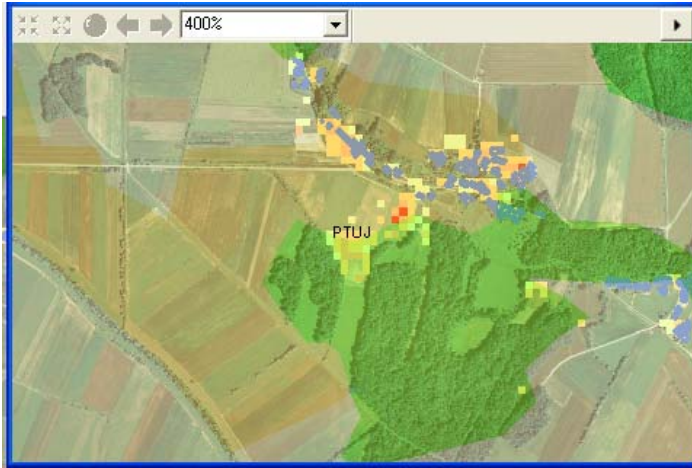
Present and covers:

- forest
- heterogeneous agricultural areas
- pastures
- arable land
- urban fabric
- inland waters
- permanent crops
- scrub and/or herbaceous vegetation associations
- industrial or commercial units

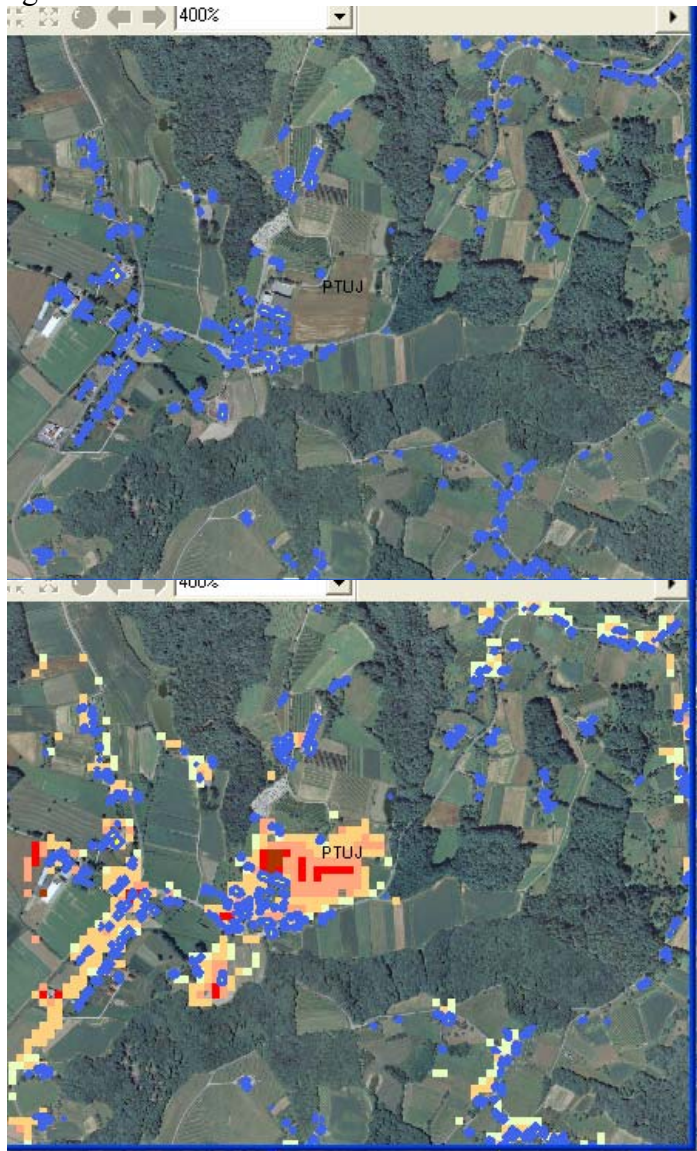
An example of misinterpreted built-up areas in Forest.



Qualitative assessment HR soil sealing layer



An example of misinterpreted and missing built-up areas in heterogeneous agricultural areas



34.
Sheet 36: Log pod Mangartom

Present and covers:

- forest
- heterogeneous agricultural areas
- pastures
- scrub and/or herbaceous vegetation associations
- bare rocks

9.1.2008

35.

Sheet 38: Rateče

Present and covers:

- forest
- heterogeneous agricultural areas
- pastures
- scrub and/or herbaceous vegetation associations
- bare rocks
- urban fabric
- sport and leisure facilities (level 3)
- sparsely vegetated areas

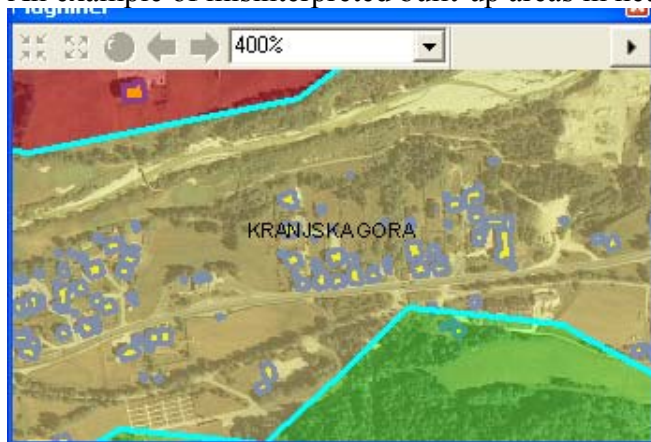
36.

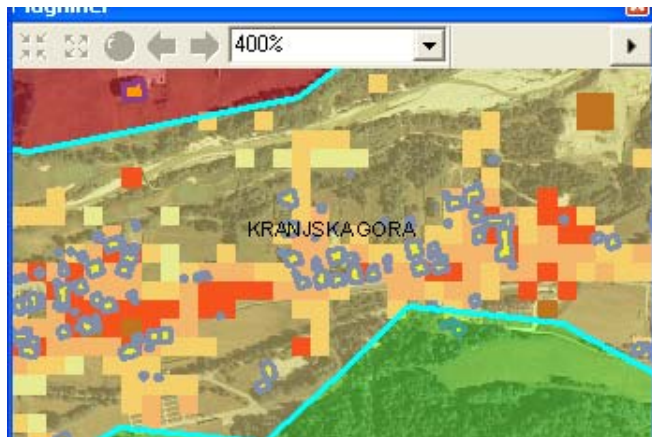
Sheet 40: Kranjska gora

Present and covers:

- forest
- heterogeneous agricultural areas
- pastures
- scrub and/or herbaceous vegetation associations
- bare rocks
- urban fabric
- beaches, dunes, sands
- sparsely vegetated areas
- glaciers and perpetual snow

An example of misinterpreted built-up areas in heterogeneous agricultural areas.





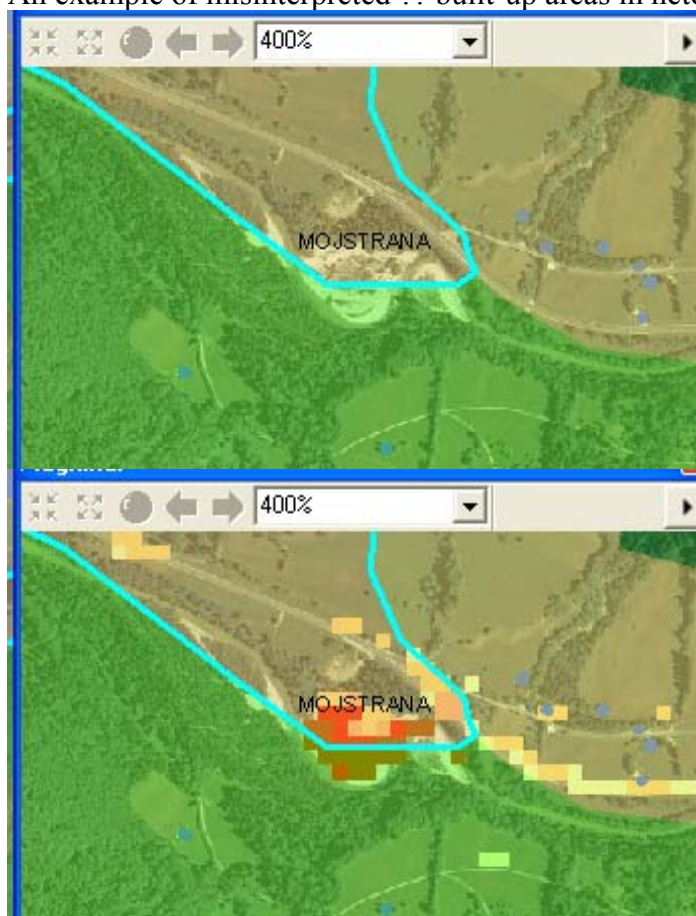
37.

Sheet 42: Mojstrana

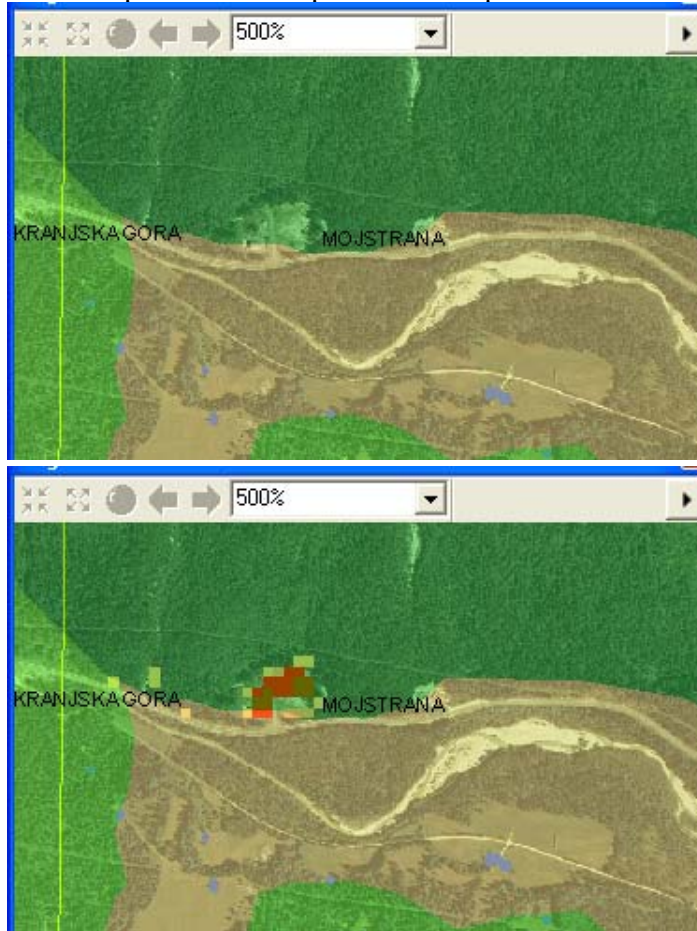
Present and covers:

- forest
- heterogeneous agricultural areas
- pastures
- scrub and/or herbaceous vegetation associations
- bare rocks
- urban fabric
- beaches, dunes, sands
- sparsely vegetated areas

An example of misinterpreted ?? built-up areas in heterogeneous agricultural areas.



An example of misinterpreted built-up areas in Forests.



38.

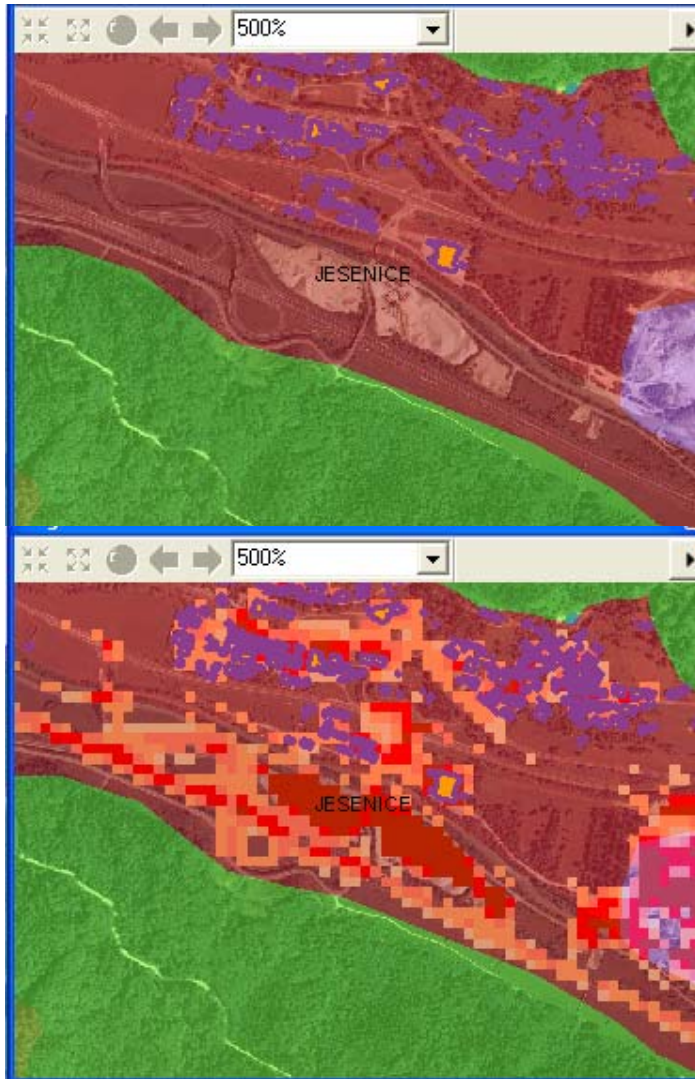
Sheet 44: Jesenice

Present and covers:

- forest
- heterogeneous agricultural areas
- pastures
- scrub and/or herbaceous vegetation associations
- urban fabric
- sparsely vegetated areas
- inland waters
- urban fabric
- industrial or commercial units

An example of misinterpreted built-up areas in Urban fabric.

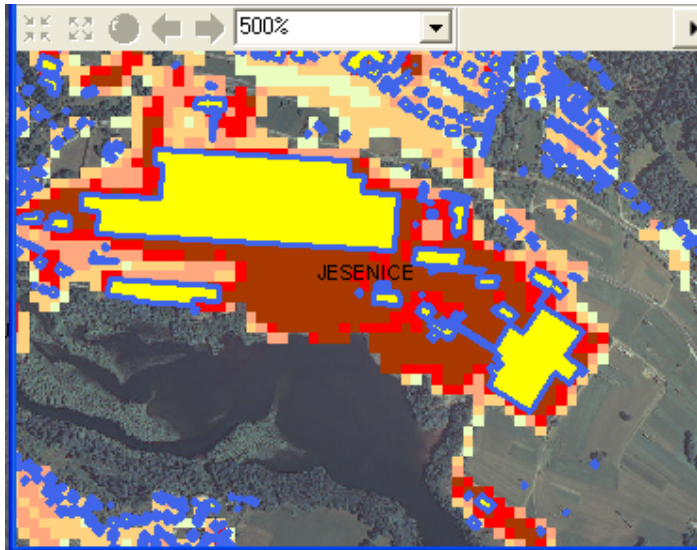
Qualitative assessment HR soil sealing layer



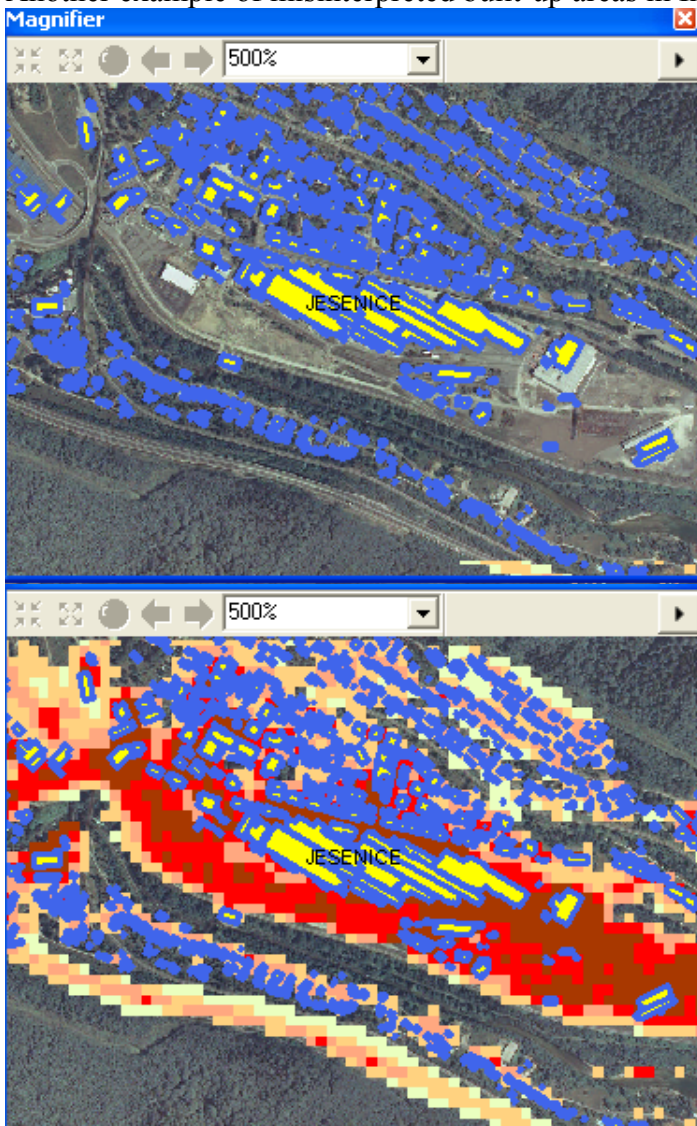
An example of misinterpreted built-up areas in Industrial or commercial units.

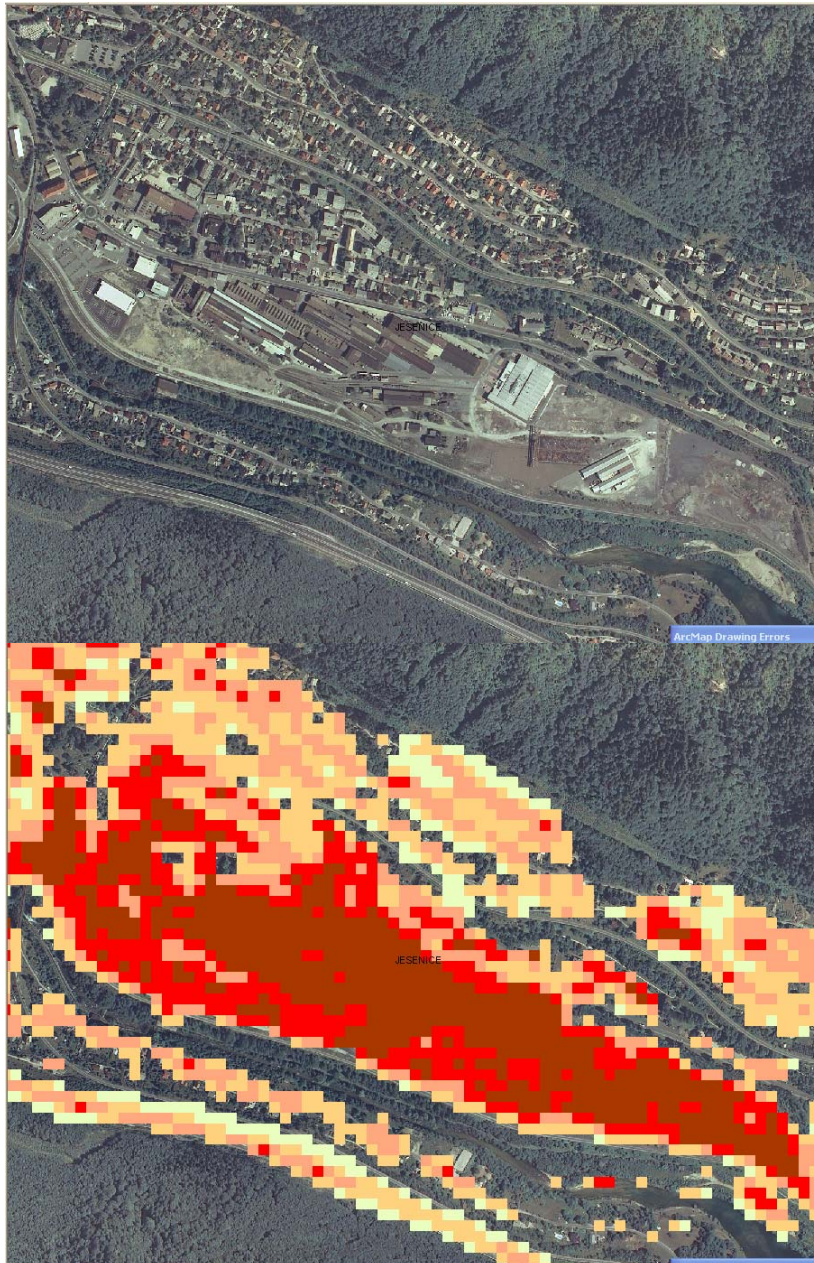


Qualitative assessment HR soil sealing layer

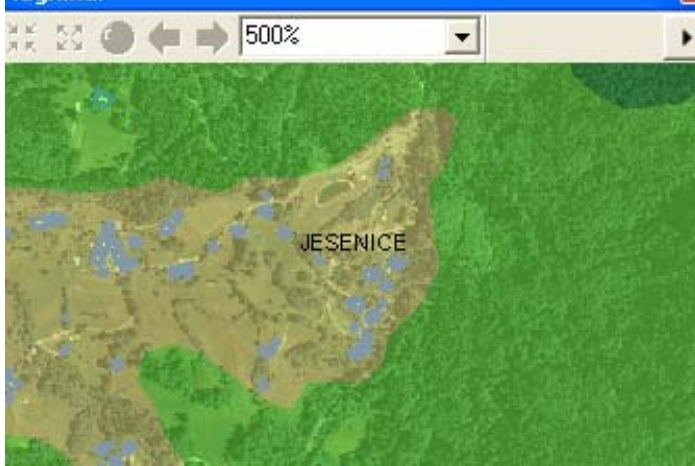


Another example of misinterpreted built-up areas in Industrial or commercial units.

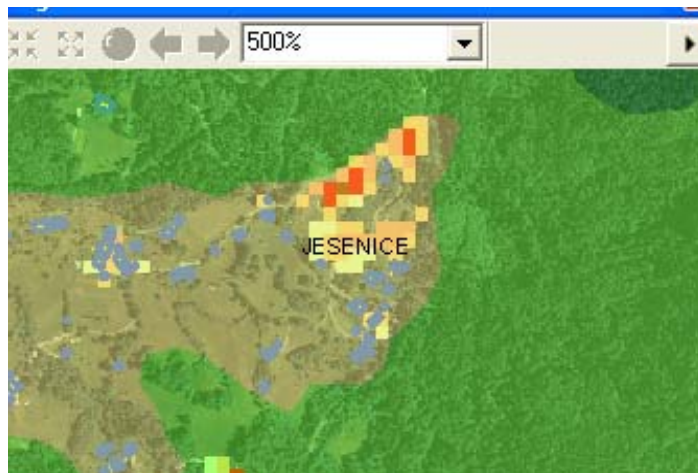




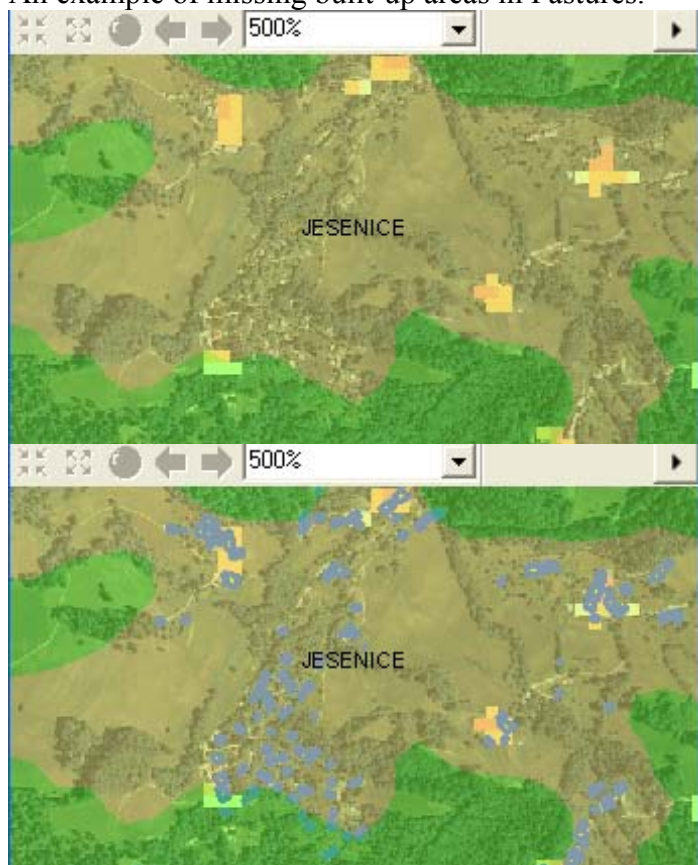
An example of misinterpreted built-up areas in Pastures.



Qualitative assessment HR soil sealing layer

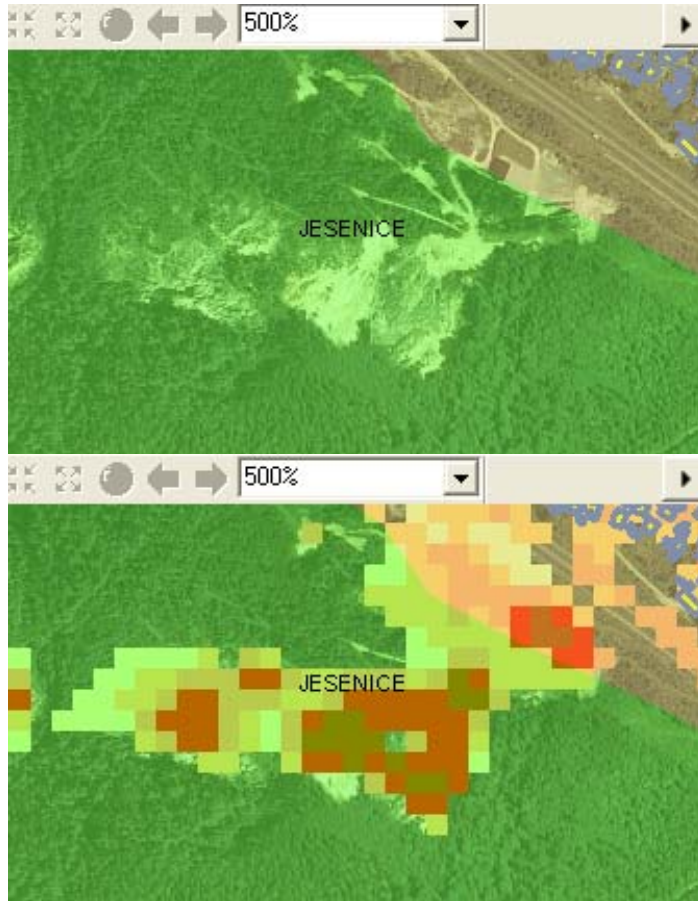


An example of missing built-up areas in Pastures.



An example of misinterpreted built-up areas in Forests.

Qualitative assessment HR soil sealing layer



Another example of misinterpreted built-up areas in Forests.



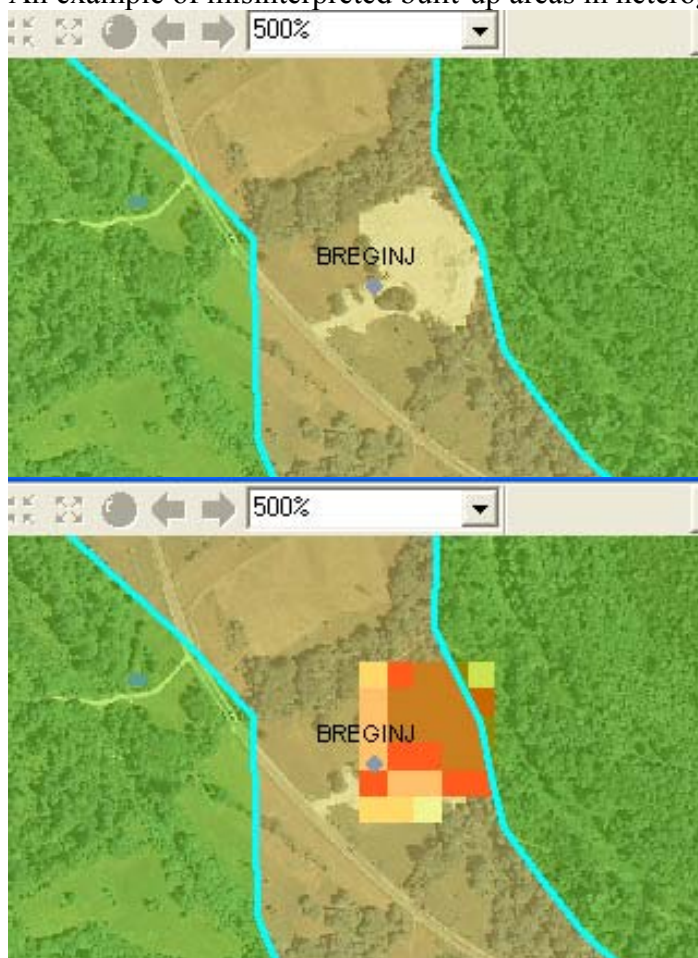
39.

Sheet 60: Breginj

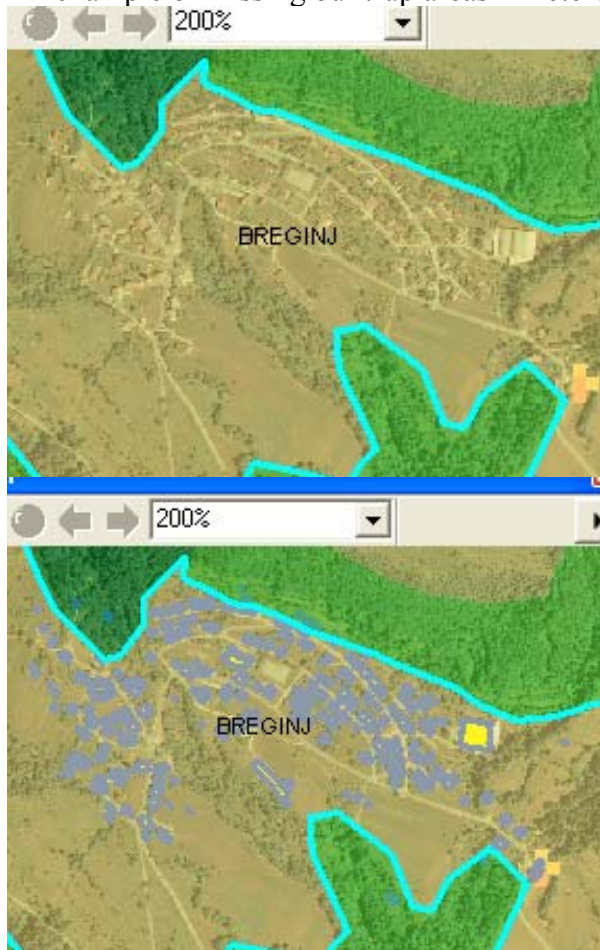
Present and covers:

- forest
- heterogeneous agricultural areas
- pastures
- scrub and/or herbaceous vegetation associations
- sparsely vegetated areas
- bare rocks

An example of misinterpreted built-up areas in heterogeneous agricultural areas.

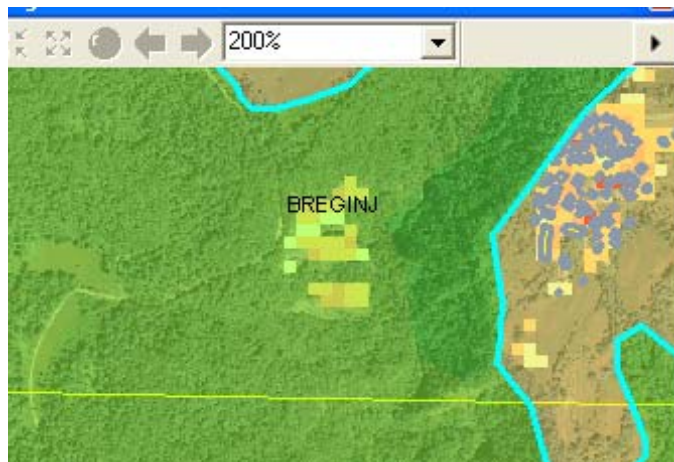


An example of missing built-up areas in heterogeneous agricultural areas.



An example of misinterpreted built-up areas in Forests.





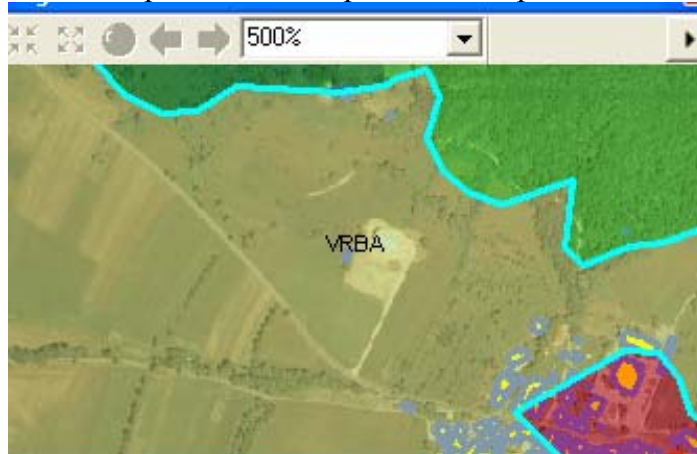
40.

Sheet 46: Vrba

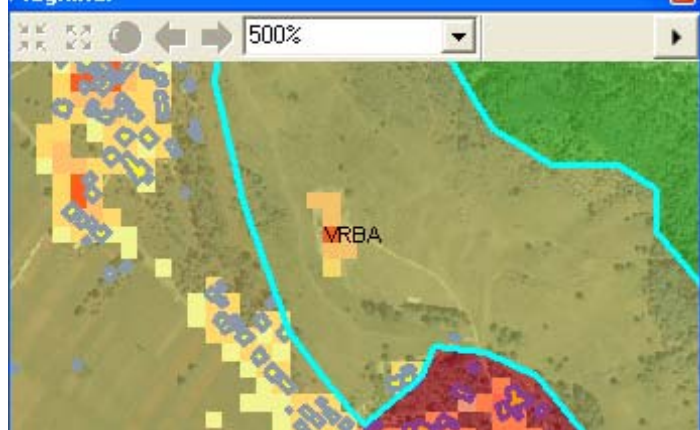
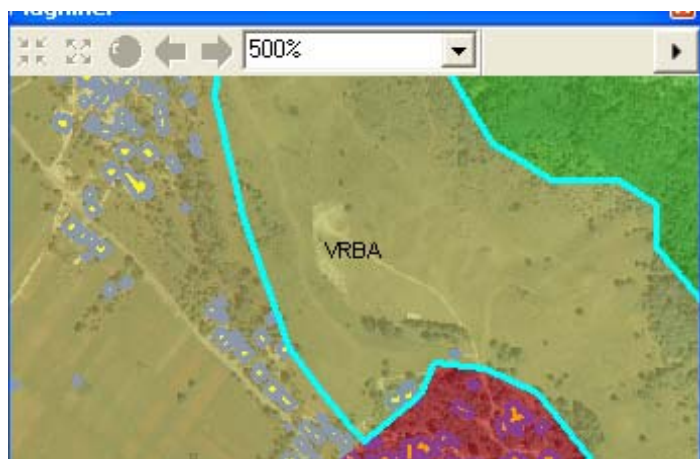
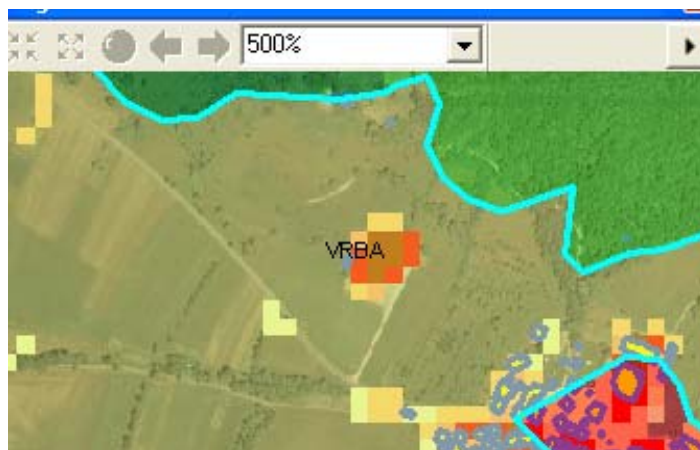
Present and covers:

- forest
- heterogeneous agricultural areas
- pastures
- scrub and/or herbaceous vegetation associations
- sparsely vegetated areas
- bare rocks
- arable land
- urban fabric
- sport and leisure facilities (level 3)

Two examples of misinterpreted built-up areas in Pastures.



Qualitative assessment HR soil sealing layer



An example of misinterpreted built-up areas in Forests.



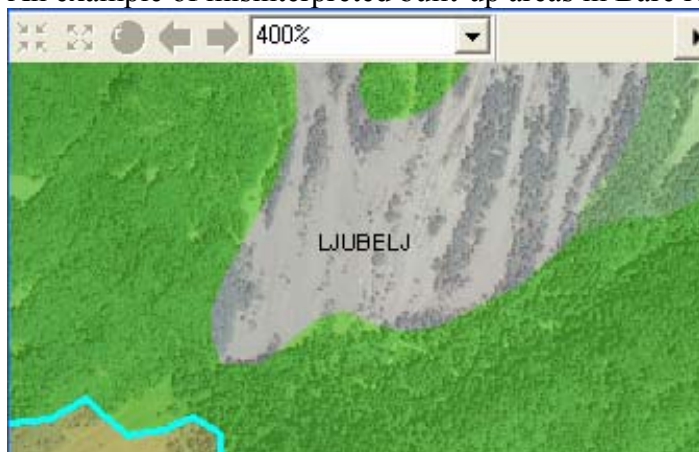
41.

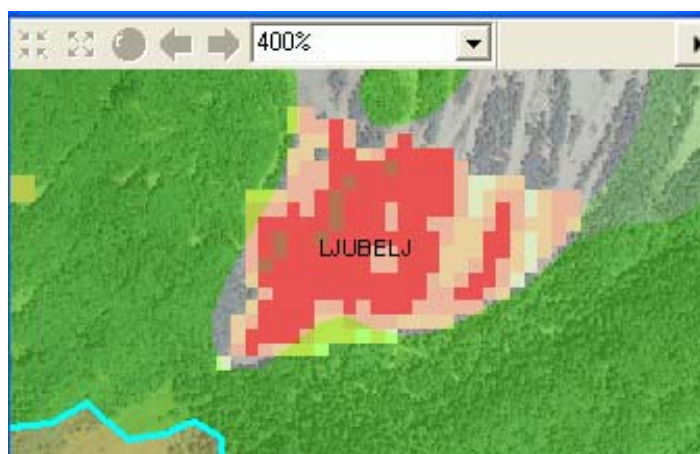
Sheet 48: Ljubelj

Present and covers:

- forest
- heterogeneous agricultural areas
- pastures
- scrub and/or herbaceous vegetation associations
- sparsely vegetated areas
- bare rocks
- urban fabric

An example of misinterpreted built-up areas in Bare rocks.





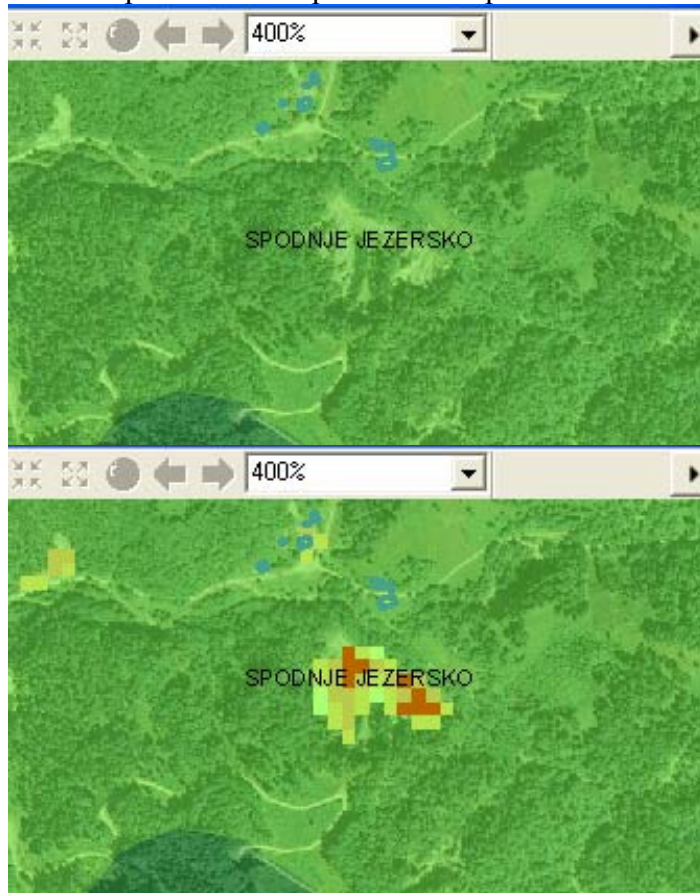
42.

Sheet 50: Spodnje Jezersko

Present and covers:

- forest
- heterogeneous agricultural areas
- pastures
- scrub and/or herbaceous vegetation associations
- sparsely vegetated areas

An example of misinterpreted built-up areas in Forests.



43.

Sheet 52: Zgornje Jezersko

Present and covers:

- forest
- heterogeneous agricultural areas
- pastures
- scrub and/or herbaceous vegetation associations
- sparsely vegetated areas
- bare rocks

44.

Sheet 54: Solčava

Present and covers:

- forest
- heterogeneous agricultural areas
- pastures
- scrub and/or herbaceous vegetation associations
- sparsely vegetated areas
- beaches, dunes, sands

An example of misinterpreted built-up areas in Pastures.

